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Proceedings of the Maritimes Regional Advisory Process of the Eastern Scotian Shelf Shrimp

23 November 1999

Hayes Boardroom
Bedford Institute of Oceanography

Chairperson

René Lavoie

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Science Branch, Maritimes Region
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May 2000

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Abstract

This proceedings records discussions that were held during the Regional Advisory Process (RAP) meeting for eastern Scotian Shelf shrimp stocks in Maritimes Region on November 23, 1999. The scientific peer review of Eastern Scotian Scotian Shrimp was conducted at the Bedford Institute of Oceanography (BIO) in Dartmouth. The discussions from this meeting are presented in this document.

Résume

Ce compte rendu résume les discussions qui ont eu lieu au cours des réunions du Processus de consultation régionale (PCR) relativement aux stocks de crevettes de l'est de la Nouvelle-Ecosse dans la Région des Maritimes le 23 novembre 1999. L' évaluation scientifique détaillée de l'évaluation des stocks de crevettes de l'est de la Nouvelle-Ecosse a eu lieu à l'Institut océanographique de Bedford (IOB) à Dartmouth. Ce document présente un compte rendu des discussions tenues pendant cette réunion.

Introduction

The meeting was held in the Hayes Boardroom, Fish Lab building, Bedford Institute of Oceanography on November 23, 1999. The Chaiman, René Lavoie welcomed the participants (Appendix 1) who had been invited to the meeting (Appendix 2). The Remit and Agenda (Appendix 3) were then reviewed.

Eastern Scotian Shelf Shrimp

Working Paper: The Scotian Shelf Shrimp (*Pandalus borealis*) Fishery in 1999 / La Pêche à la Crevette (*Pandalus borealis*) sur le plateau néo-écossais en 1999. DFO RAP Working Paper 99/108.

Author(s): P. Koeller, M. Covey, and M. King

External Reviewers: Dr. Jon Grant and Shelton Harley

Rapporteur: Ross Claytor

Remit:

- Assess the status of eastern Scotian Shelf shrimp until as late as possible in 1999. The assessment should include:
  - an analysis of existing CPUE and survey information; and
  - where possible, address research recommendations raised in fall 1998.
- Provide advice for the 2000 fishery.
- Produce a Stock Status Report and supporting Research Document documenting the results of the assessment.

Summary:

1. The fishery continues to catch the TAC and stay within the 65 count (numbers per pound).
2. The amount of catch taken from the inshore off Bad Neighbour Shoal increased from 20% of the total catch in 1998 to 40% in 1999.
3. Biomass and CPUEs continued to increase in 1999.
4. The DFO-industry survey shows that the 1995 year-class is strong while the 1996 year-class is very weak.

5. There has been a change in the catch composition reflecting the strong 1995 and weak 1996 year-classes.

6. Exploitation was estimated to be 12.5%.

7. The TAC for 2000 can remain at the 1999 level or be increased to take advantage of the strong 1995 year-class but any increase should be kept at <10% to conserve the weak 1996 year-class which will constitute a significant part of the catch.

8. A decrease in the TAC may be required in 2001 to conserve the spawning stock.

Issues:

Peter Koeller introduced an evolutive method of comparing the results of the present (1999) year assessment with the results obtained in the previous year. The method uses fisheries, survey and other data to derive a visual message concerning the health of the stock over time. The method is called Retrospective Traffic Light Analysis.

Discussion on the traffic light analysis focused on the following issues:

1. Determining Decision Rules for scoring the indicators. Developing an objective method for scoring the indicators would ensure continuity in the method from year to year.

2. Determine whether or not weighting of the indicators would improve the method. It was pointed out that simulations had indicated weighting was not beneficial. Nevertheless, some indicators were felt to be more important than others. For example, two bad year-classes in a row should be given more negative weight than one bad year-class.

3. An investigation of the relationship between the indicators and abundance should play a large part in the development of the method. For example, some felt that counts would be a sensitive indicator, especially within season, while others argued that it would be the last indicator to change.

4. How to use the method for adjusting the TAC. It was felt a retrospective approach would be beneficial to test these methods.

5. The precautionary approach umbrella for developing the traffic light method was questioned. Precautionary approach still has many different meanings depending on the background of the individual. Some were worried that the precautionary approach would be used to reduce fishing when it was not necessary.

Various factors relating to the interaction between the environment and the status of the resource were discussed. These included:

1. Temperature changes might affect recruitment, distribution, and survival because this area represents the southern range for this cold water species. As a result, small increases in temperature might have relatively bigger effects on the stock and the above factors might be among the first to be affected.

2. Habitat differences might affect exploitation rates on males versus females and counts obtained in the fishery if there is a differential distribution by life-history stage. It was stated that much of the fishing area was on clay but that there were area differences in sizes, so that if small shrimp were being caught in one area then the fleet would move to adjust the counts.

3. Density and environmental effects on the process of shrimp developing from juveniles to males to females was discussed with respect to the impacts that a delay in this process might have on mortality and fishing strategies.

4. Predator and prey interactions were discussed with respect to the negative correlation observed between cod and shrimp abundance. It was pointed out that shrimp may be prey items for non-commercial groundfish species that are not in low abundance as well as herring and capelin that are increasing in abundance.

Development of a recruitment index was identified as an important improvement for this assessment. The 1996 year-class is low and the size of the 1997 year-class is unknown. Shrimp are a short-lived species and the fishery is highly dependent on incoming recruitment. Predicting recruitment is essential for providing catch level advice. Points raised were:

1. Further development of the February recruitment survey was supported.

2. An examination of recruitment trends in other shrimp stocks was suggested as a way of assisting in the interpretation of recruitment trends.

There appears to be little movement among patches. Therefore, it is important to understand how shifts in effort affect exploitation rates among these patches or stock components.

1. Recently, catch has increased in one area from <10% to 20% in 1998 and 40% in 1999.

2. This shift may lead to this component being subjected to higher-than-desirable exploitation.

Several points where raised with respect to the advice and management options for next year.

1. What are pros and cons to taking the 1995 year-class now if most will die anyway or is there a benefit to leaving some as a hedge against the low 1996 year-class.

2. Would more younger shrimp be killed by putting the TAC up next year in attempts to take advantage of the large 1995 year-class.

3. It was pointed out that small shrimp from the 1997 year-class would not be highly vulnerable to the fishery.

4. Predictions for the coming year should be made to test understanding of the stock and fishery dynamics. For example, we would expect CPUE to increase but counts drop because most of the catch would be from the 1995 year-class which would be the largest animals in the population.

Recommendation:

Discussion on the traffic light method lead to the recommendation that a meeting be held to further develop the traffic light method for assessing the status of the resource and adjusting the TAC.

Appendix 1. List of Participants.

Peer review of Inshore scallop and Eastern Nova Scotia Shrimp stocks
November 23-26, 1999
Hayes Boardroom, Fish Lab Building, Bedford Institute of Oceanography, Dartmouth, NS

Scientific Referees

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Appendix 2. Invitation Letter.

Maritimes Region
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E-mail : Claytonv@mar.dfo-mpo.gc.ca

October 20, 1999

Distribution

Subject: Peer review of Inshore scallop and Eastern Nova Scotia Shrimp stocks

The assessments of Inshore scallop and Eastern Nova Scotia Shrimp stocks in Maritimes Region will be reviewed in the Hayes Boardroom, Fish Lab Building, Bedford Institute of Oceanography, Dartmouth, November 23-26, 1999.

The purposes of peer review are: to identify important questions that may have been neglected; to examine the scientific approaches of the stock assessments; to identify any weaknesses in methodology; to help improve the clarity of assessments; to make research recommendations; and to develop collaborative research programs.

The peer review includes detailed review of stock assessments and Stock Status Reports. Detailed stock assessments will be done for four inshore scallop stocks (Middle Bay of Fundy - Area 1); (Brier Island/Lurcher Shoal and St.Mary's Bay - Areas 3 & 7); (Digby – Area 4); (Southwest New Brunswick – Area 6); and Eastern Scotian Shelf Shrimp.

Copies of the draft assessments and the draft stock status reports will be sent to the referees one week before the meeting to allow them time to become familiar with the material. At the meeting, science staff will provide a brief overview of their assessments which should include: the main conclusions, the supporting evidence, any new methods, and major limitations. The presentation will be followed by comments from any of the scientific referees and then from any of the observers. Finalised stock status reports will be prepared at the meeting. The minutes of this meeting will be published as a proceedings.

We greatly appreciate your contribution to this valuable exercise.

René E. Lavoie, Ph. D.
RAP Committee Chairman
Science Branch
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S. Smith, R. Miller
D. Geddes, V. Myra

Distribution:

Scientific referees	*Government - Others*	*Industry*
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Shelton Harley	Jim Jamieson, Maritimes	Geoffrey d'Entremont
	Tim Surette, DFO/MPO, Yarmouth	Reg Hazelton
	Greg Peacock, Maritimes	Vance Hazelton
	Bruce Osborne, NS/N.-É.	John Kearney
	Carol Ann Rose, DFO/MPO St. Andrews	Brian Longmire
	Ian Marshall, DFO/MPO, Yarmouth	Michael Longmire
		Michell Longmire
		Michael Chute
		Greg Thompson
		Klaus Sonnenberg
		R.G. (Dick) Stewart
		Raymond King
		Claude d'Entremont
		Jean St.Cyr

Appendix 3. Meeting Schedule and Remit.

Schedule

Regional Advisory Process
Inshore Scallop and Eastern Scotian Shelf Shrimp Assessments
Hayes Boardroom, Fish Lab, BIO
Dartmouth, Nova Scotia
23 - 26 November 1999

Time	Tuesday	Wednesday	Thursday	Friday
	23 November	24 November	25 November	26 November
09:00 – 09:30	Introduction	Proceedings Review	Proceedings Review	Proceedings Review
09:30 – 10:00	Eastern Scotian Shelf Shrimp	Inshore Scallop Area 4	Inshore Scallop Area 1	Reruns
10:00 – 10:30				
10:30 – 11:00		SSR review if possible	SSR review if possible	
11:00 – 11:30				
11:30 – 12:00				
12:00 – 12:30	**Lunch**	**Lunch**	**Lunch**	**Lunch**
12:30 – 13:00				
13:00 – 13:30	Eastern Scotian Shelf Shrimp	Inshore Scallop Area 3 / 7	Inshore Scallop Area 6	SSR Review
13:30 – 14:00				
14:00 – 14:30				
14:30 – 15:00				
15:00 – 15:30	SSR review if possible	SSR review if possible	SSR review if possible	
15:30 – 16:00				
16:00 – 16:30				
16:30 – 17:00				

Meeting Remit

Eastern Nova Scotia Shrimp

23 November 1999
Hayes Boardroom, Fish Lab building
Bedford Institute of Oceanography
Dartmouth, N. S.

Eastern Scotian Shelf Northern Shrimp

- Assess the status of Eastern Shelf shrimp until as late as possible in 1999. The assessment should include:
  - An analysis of existing CPUE and survey information.
  - Where possible, address research recommendations raised in fall 1998.
- Provide advice for the 2000 fishery.
- Produce a Stock Status Report and supporting Research Document documenting the results of the assessment.

Appendix 4. List of Recommendations.

- Discussion on the traffic light method lead to the recommendation that a meeting be held to further develop the traffic light method for assessing the status of the resource and adjusting the TAC.

Appendix 5. List of Documents Tabled.

Koeller, P., Covey, M., and M. King. 1999. The Scotian Shelf Shrimp (*Pandalus borealis*) fishery in 1999 / La pêche à la crevette (*Pandalus borealis*) sur le plateau Néo-Écossais en 1999. DFO RAP Working Paper 99/108.